Appl. No.: 10/731,770
Amdt. dated 03/03/2006
Reply to Office action of 01/04/2006

REMARKS/ARGUMENTS

In the final Office Action dated January 4, 2006, Claims 1-26 are pending. The Examiner has withdrawn the previous objection to the drawings and the rejection under 35 U.S.C. § 112, second paragraph. However, the Examiner rejects Claims 1-4 and 11 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,480,949 to Van De Bogart. The Examiner also rejects Claims 13-21 23, and 24 under 35 U.S.C. § 103(a) as being unpatentable over Van De Bogart in view of U.S. Patent No. 5,143,490 to Kopras. Furthermore, the Examiner rejects Claims 5-9 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Van De Bogart and Claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Van De Bogart in view of U.S. Patent Application Publication No. 20050105973 to MacAuthor. Finally, the Examiner rejects Claim 22 under 35 U.S.C. § 103(a) as being unpatentable over Van De Bogart in view of Kopras and MacAuthor and Claims 25 and 26 under 35 U.S.C. § 103(a) as being unpatentable over Van De Bogart in view of U.S. Patent No. 2,923,053 to Babbitt.

As explained more fully below, the pending claims of the present application are patentably distinguishable from the cited references. In light of the subsequent remarks, which do not raise new issues, Applicant respectfully requests reconsideration and allowance of the claims.

Van De Bogart discloses a combination opposed helix router for routing composite material. In particular, the helix router includes a lower section having a 45° right-hand helix angle cutting edge to shear fibers up, and an upper section having a 70° left-hand helix angle cutting edge to shear fibers down. Van De Bogart also discloses that the right-hand helix cutting edges include a 10° primary clearance angle, a 0.020 inch wide land, and a 20° second clearance angle, while the left-hand helix cutting edges include a 20° primary clearance angle, 0.030 inch wide land, and a 30° secondary clearance angle with a 10° positive radial rank angle.

Independent Claim 1 recites a routing tool for cutting material that comprises a substantially cylindrical shaft member having a shank portion and a cutting portion. The cutting portion includes a plurality of cutting teeth disposed peripherally about a first helix and an intersecting second helix, wherein each cutting tooth defines a first cutting clearance on a first cutting edge and a first non-cutting clearance on a first non-cutting edge. Each cutting tooth

further defines a second cutting clearance on a second cutting edge and a second non-cutting clearance on a second non-cutting edge. Claim 1 also recites that each cutting tooth includes a respective flat defined by each of the first cutting and non-cutting edges and the second cutting and non-cutting edges and that each flat extends along each cutting tooth resulting in a circular land on an outside diameter of the cutting portion. Independent Claims 13 and 25 include similar recitations in the context of an apparatus and a method, respectively.

Applicants submit that independent Claims 1, 13, and 25 are distinguishable from Van De Bogart. In particular, Van De Bogart does not teach or suggest a plurality of cutting teeth disposed peripherally about a first helix and second intersecting helix, wherein each cutting tooth defines a first cutting clearance on a first cutting edge and a first non-cutting clearance on a first non-cutting edge, a second cutting clearance on a second cutting edge and a second non-cutting edge clearance on a second non-cutting edge, and a flat defined by each of the first cutting and non-cutting edges and the second cutting and non-cutting edges. In contrast, Van De Bogart discloses a pair of lower cutting edges and a plurality of upper cutting edges that do not cooperate to define a plurality of cutting teeth, as defined by the claimed invention. More specifically, Van De Bogart does not teach or suggest that the right and left-hand helixes intersect to define a plurality of cutting teeth disposed about both the right and left-hand helixes, where each cutting tooth includes first and second cutting and non-cutting edges (i.e., two cutting edges and two non-cutting edges per cutting tooth). Rather, Van De Bogart simply discloses that there are a pair of lower cutting edges and a plurality of upper cutting edges. The Examiner characterizes the upper cutting edges as first cutting teeth and the lower cutting edges as second cutting teeth; however, each cutting tooth (as defined by the Examiner) does not include first and second cutting and non-cutting edges, which is in contrast to the claimed invention. Even assuming that an upper cutting edge adjacent to a lower cutting edge collectively define a "cutting tooth," there are not a plurality of "cutting teeth" arranged about both the left and right-hand helixes, which is unlike the claimed invention where a plurality of cutting teeth are arranged about both a first and second helix.

Moreover, Van De Bogart does not teach or suggest that the two lower cutting edges include a cutting edge and a cutting clearance; conversely, Van De Bogart only discloses that the

lower cutting edges include primary and secondary clearance angles (i.e., non-cutting clearances). Thus, the lower cutting edges do not include a cutting clearance (e.g., radial rake angle) and would act as "chip breakers" rather than edges that are capable of cutting the material. Although Van De Bogart discloses that the upper cutting edges include primary and secondary clearances, as well as a radial rake angle, independent Claim 1 requires that each tooth include first and second cutting and non-cutting clearances on respective first and second cutting and non-cutting edges. In addition, Van De Bogart specifically discloses a cutting clearance (e.g., radial rake angle) for the upper cutting edges, which provides further support that Van De Bogart did not intend to include a cutting clearance for the lower cutting edges.

Furthermore, Van De Bogart does not teach or suggest that the upper and lower cutting edges cooperate to define a respective flat. In contrast, Van De Bogart discloses that each of the lower cutting edges and upper cutting edges include respective lands, but these lands are distinct and do not cooperate to define a respective land as per the claimed invention (although the claims of the present application recite that each cutting tooth includes a "flat," while Van De Bogart discloses that each cutter includes a "land," the Figures disclosed in Van De Bogart demonstrate that the lands are similar to the flat defined on each cutting tooth). Thus, the first and second cutting and non-cutting edges recited in the claims of the present application collectively define a single flat rather than a pair of flats as in Van De Bogart. Therefore, even assuming that an upper cutting edge adjacent to a lower cutting edge collectively define a "cutting tooth," the "cutting tooth" does not include a respective flat cooperatively defined by each of the first and second cutting and non-cutting edges, as recited by independent Claim 1.

Additionally, although each of the dependent claims are distinguishable from the cited references for at least those reasons discussed above with respect to independent Claims 1, 13, and 25, Applicants submit that several dependent claims are further distinguishable from the cited references. In particular, Van De Bogart, nor any of the other cited references taken alone or in combination, teach or suggest dependent Claims 5 and 17, which recite that the first cutting and non-cutting edges extend radially outward to define a length of the flat, and the second cutting and non-cutting edges extend radially outward to define opposing edges of the flat. As described above, Van De Bogart does not teach or suggest that the upper and lower cutting edges

define a respective flat, let alone a flat as defined by Claims 5 and 17. The land (5) referred to by the Examiner is only associated with respective lower cutting edges, while the land (8) is only associated with respective upper cutting edges, which is distinctly different than the claimed invention, where the first and second cutting and non-cutting edges cooperate to define a respective flat.

Applicants also submit that dependent Claims 8 and 20 are further distinguishable from the cited references. Namely, the Examiner finds that although a cutting clearance is not provided for the lower cutting edges, "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to select the clearance angle of the first cutting edge depending on the material being cut and how much clearance is needed to remove the debris/cut material," and Applicants have not provided that the first cutting edge clearance "provides an advantage, is used for a particular purpose, or solves a stated problem." Applicants respectfully disagree, as Van De Bogart does not teach or suggest that the lower cutting edges include a cutting clearance at all, which indicates that the lower cutting edges are simply "chip breakers" that do not actually cut the material. As described above, Van De Bogart specifically discloses a cutting clearance for the upper cutting edges, which provides further support that Van De Bogart did not intend to include a cutting clearance for the lower cutting edges. Moreover, the Background of the present application distinguishes those references that disclose routers not having cutting edge clearances, as these prior art routers provide an undesirable surface finish, chattering, heat generation, and delamination of composite material. Therefore, in contrast to the Examiner's assertions, the cutting clearances of the claimed invention provide an advantage over prior art routers, are used for a particular purpose, and solve a stated problem.

As such, Van De Bogart fails to teach or suggest independent Claims 1, 13, and 25 of the present application. Moreover, none of the remaining references, taken individually or in combination with Van De Bogart, teach or suggest Claims 1, 13, and 25. Therefore, the rejections of independent Claims 1, 13, and 25 under 35 U.S.C. § 102(b) and § 103(a) over the cited references are overcome. As such, it is submitted that dependent Claims 2-12, 14-24, and 26 are allowable for at least those reasons discussed above with respect to independent Claims 1,

13, and 25, respectively. Moreover, dependent Claims 5, 8, 17, and 20 are further distinguishable from the cited references, as discussed above.

Appl. No.: 10/731,770
Amdt. dated 03/03/2006
Reply to Office action of 01/04/2006

CONCLUSION

In view of the remarks presented above, which do not raise new issues, Applicants submit that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicants' undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

Trent Kirk
Registration No. 54,223

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being facsimile transmitted to the US Patent and Trademark Office at Fax No. (571) 273-8300 on the date shown below.

Lisa L. Rone — 3/3/06
Lisa L. Rone — Date